IN THE SPECIFICATION:

The following amendments to the specification correct minor typographical and labeling errors and do not alter the content of the specification nor do these amendments introduce new matter.

Replace the paragraph beginning on page 6, line 28 with the following replacement paragraph:

In one feature of the present aspect, the method may further include inducing a biasing force on the armature of the motor. According to this characterization, the method may further include, providing an alternating input current to generate an alternating electromagnetic field. According to this characterization, when the electromagnetic field travels in a first direction a first portion of the biasing force is increased while a second portion is decreased to move the armature in a first direction. Similarly, when the electromagnetic field travels in a second direction the first portion of the biasing force is decreased while the second portion is increased to move the armature in a second direction. Additional aspects, advantages and applications of the present invention will be apparent to those skilled in the art upon consideration of the following description and drawings.

Replace the paragraph beginning on page 8, line 26 with the following replacement paragraph:

According to one embodiment, the magnetic member 104 may be a permanent magnet disposed relative to the armature 106 so that it provides a biasing force on the armature 106. The biasing force may be a constant biasing force. In the present context, constant biasing force refers to a substantially constant force acting on the armature 106, at least during motor operation, e.g. when a current is applied to the drive coil 102. In this regard, the magnetic member 104 may also be disposed about the armature 106. In particular, the magnetic member 104 may be annular in shape such that it circumscribes the armature 106. More particularly, the magnet member 104 may centrally circumscribe the armature 106 such that it is both configured and located to provide the biasing force on the armature 106. In this regard, the magnetic member 104 may be radially polarized, with the interior being the north (N) pole and the exterior being the south (S) pole. That is, the circumferentially facing sides of the magnetic member 104 define the magnetic poles such that magnetic flux passes from one circumferentially facing side of the magnetic member 104 around the inner and outer ends of the magnetic member 104 into the opposite circumferentially facing side along the paths indicated generally as 114 and 116. Thus, absent a current being applied to the coil

102, the magnetic member 104 generates permanent magnetic fields or flux between its poles that are equal and opposite, as indicated by the paths 114 and 116 on Figure 1. The central location of the magnet member 104 relative to the armature 106 locates the magnetic fields indicated by 114 and 116 such that they act on the armature 106 in a substantially balanced manner, e.g. in ~~an~~ equal and opposite directions. This in turn results in the magnet member 104 providing a substantially balanced magnetic force on the armature 106 that coincides with the direction of movement of the armature 106 along the axis C, absent current being applied to the coil 102. Those skilled in the art will appreciate, however, other configurations and locations of the magnet member 104 that provide the substantially balanced force on the armature 106 as a function of other configurations of the motor 100.

Replace the paragraph beginning on page 10, line 29 with the following replacement paragraph:

Operationally, the motor 100 may be viewed as a pair of back-to-back variable reluctance motors that share a portion of a magnetic circuit. According to this characterization, as current is applied to the coil 102 in a first direction, as for instance in the counterclockwise direction, electromagnetic flux is generated along the path 118 in direction (A). This in turn affects the strength of the permanent magnetic fields along the paths 114 and 116. In particular, an electromagnetic field traveling in the direction (A) along the path 118 in the opposite direction of the permanent magnetic field in path 116, and in the same direction as the permanent magnetic field in the path 114, operates to increase the permanent magnetic field along the path 114 and decrease the permanent magnetic field along the path 116. This in turn causes the armature 106 to move between the poles 112 and 110 in the direction (A) toward the pole 110. Similarly, when the current in the coil 102 is switched, e.g. is induced in the opposite direction, the electromagnetic field is generated along the path 118 in direction (B). This in turn, operates to reduce the strength of the permanent magnetic field along the path 114, which is traveling in the opposite direction, and increases the permanent magnetic field along the path 116, which is traveling in the same direction, causing the armature 106 to travel between the poles 112 and 110 toward the pole 112. In this manner, switched application of the current to the coil 102 offsets the substantially balanced permanent magnetic fields along paths 114 and 116 that exist about the armature 106 absent current to the coil 102. This, in turn, causes armature 106 to move back and forth between the poles 110 ands 112 as a function of the direction of the current and resulting flow of the electromagnetic field along path 118. Of

importance, is that the biasing force provided by the magnetic member 104 operates to cancel out non-linear forces that are typically exhibited by a variable reluctance motor. In this regard, the operational principles will now be explained in mathematical terms using a single variable reluctance motor to explain the advantages of the present motor 100. Thus, for a two pole variable reluctance motor as represented, for instance, by paths 114 and 118, the output force generated may be given by, Equation 1:

Replace the paragraph beginning on page 13, line 21 with the following replacement paragraph:

Referring to Figure 2 there is shown an alternative embodiment of the motor 100, namely the motor 200. The motor 200 is substantially similar to the motor 100 except that rather than a single coil 102, the motor 200 includes a second coil 220 ~~would~~ wound around pole 112 in the same direction as thee coil 102. According to this characterization, the coil 220 is electrically connected to coil 102 such that current flows in the same direction in both coils 102 and 220 to generate the electromagnetic field along path 118. Operationally, the motor 200 is identical to motor 100. Of note, however, it will be appreciated that the additional windings provided by the coil 220 may increase the maximum output force the motor 200 is capable of generating as output force is directly related to the number of windings of the coils 102 and 220.

Replace the paragraph beginning on page 18, line 14 with the following replacement paragraph:

The transducer 508 includes components, such as the motor 100 and transducer electronics, which may be damaged by exposure to biological fluids, and therefore, it is desirable to limit exposure of such components to the same. At the same time, however, providing an interconnection between a movable member, such as the actuator ~~512~~514, and the transducer 508 that is both movable and sealed is difficult as such an interconnection necessitates forming a seal between the actuator 514 and the transducer housing that does not interfere with driving or moving of the actuator 514 in response to transducer drive signals. Advantageously, the armature 106 and the stator 120 of the motor 100 are separate components, each of which includes an independent biocompatible enclosure. This in turn permits separation of the means for providing the movable connection between the actuator 514 and the transducer 508, and the means for sealing sensitive internal components of the transducer 508, such as the motor 100.

Replace the paragraph beginning on page 18, line 26 with the following replacement paragraph:

According to one example, the armature 106 is located in a biocompatible enclosure, comprising a cylindrical housing 720 made of a biocompatible material, such as titanium. The housing 720 includes an integrally formed bottom and a separately connectable lid 728 to facilitate assembly, e.g. insertion of the armature 106 followed by hermetic welding of the lid 728 to the housing 720 to form a sealed biocompatible enclosure. According to this example, the actuator 514 is interconnected and extends perpendicularly from the lid portion 728 through an opening formed in an end 714 of the transducer housing 708. As will be appreciated, the actuator 514 may be an integral part of the lid portion 728 or may be interconnected to the lid portion 728 by a means such as a weld. It will be appreciated that according to the present principles, the biocompatible ~~enclosure~~ housing 720 for the armature 106 may be formed by other means as well, such as for example, electroplating of the armature 106 with a biocompatible material, such as gold.

Replace the paragraph beginning on page 19, line 8 with the following replacement paragraph:

A biocompatible enclosure 710 is also provided between the enclosure 720 and the coil 102 and magnetic member 104. As will be further appreciated from the following description, the enclosure 710 in conjunction with the back iron 108 seals the coil 102 and the magnetic member 104 from exposure to bodily fluids. According to this characterization, the ~~can~~ enclosure 710 conforms to the shape of the coil 102 and magnetic member 104 such that each end includes a flanged portion. The enclosure 710 further includes a mating flange 724 at the end 714 and a mating flange 722 at the end 716 of the transducer 508. The flange 724 is connected to a tube 726, which extends interior from the end 714 of the transducer 508 where it is sealably connected to the flange 724, such as by a hermetic weld. Similarly, the flange 722 is connected to a tube 718, which extends interior from the end 716 of the transducer 508 where it is sealably connected to the flange 722, such as by a hermetic weld. The flange 724 also connects to the flanged portion of the enclosure 710, such as by a hermitic weld. Similarly, the flange 722 connects to the flanged distal end of the enclosure 710, such as by a hermitic weld. As will be appreciated, the biocompatible enclosure 710 made up of the tubes 726 and 718, the flanges 724 and 722, and the hourglass shaped can may be made of numerous biocompatible materials, with at least one example including titanium.

Replace the paragraph beginning on page 20, line 15 with the following replacement paragraph:

The helical leafs 802 in the spring washers 700 and 702 allow the interior portions of the spring washers 700 and 702 to flex inward and outward, relative to their rigidly fixed peripheries. In particular, the helical leafs 802 flex relative to the fixed peripheries with the advancing and retracting of the armature 106 and actuator ~~112~~514. Of importance, is that while the spring washers 700 and 702 permit axial movements of the armature 106 and actuator 514 relative to the transducer 508, they restrict lateral or side-to-side movements. As will be appreciated by those skilled in the art, minimizing such lateral movement of the armature 106 and actuator 514 is highly desirable in a system designed to axially stimulate an auditory component, such as the incus.

Replace the paragraph beginning on page 20, line 24 with the following replacement paragraph:

It should be noted in this regard, that according to this design, fluid is permitted to flow through the interior portion of the transducer housing 708. In particular, the helical leafs 802 permit fluid to enter the interior space defined by the housing 720 and ~~can~~ enclosure 710 through the tubes ~~724~~ 726 and 718 at each end of the transducer 508. Advantageously, however, as noted above, the sealing of transducer components is separated from the means for providing the movable connection between the armature 106 and actuator 514.